US-PAT-NO: 5824040

DOCUMENT-IDENTIFIER: US 5824040 A

TITLE: Endoluminal prostheses and therapies for highly variable body lumens

---------- KWIC ---------

Detailed Description Text - DETX (22):
A method of fabricating a helical stent-graft 71 will be described with reference to FIG. 5E. A series of linked diamond-shaped elements 73 are first attached to a strip of liner material 75, typically being stitched with a sewing machine. The ribbon is then wound over a mandrel 77 of the desired size, and adjacent edges of the ribbon are sewn to each other (or otherwise permanently joined). Such a method may be substantially automated and continuous, and is thus particularly beneficial for producing a large number of prostheses. The helical stent-graft may optionally be cut to length, but will preferably include a crown stitched stent-ring 79 for sealing and ends against a surrounding lumen when deployed therein.

L Number	Hits	Search Text	DB	Time stamp
1	0	(measure or measuring) with aneurysm and stent and restrict$3 near3 (dilation or expansion or expand)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/09/05 14:46
2	43	(measure or measuring) with aneurysm and stent	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/09/05 14:57
3	74	(623/903).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/09/05 15:26
4	385	(623/1.13).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/09/05 15:46
5	118	(623/1.23).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/09/05 15:58
6	38	(((measure or measuring) with aneurysm and stent) or ((623/903).CCLS.) or ((623/1.13).CCLS.) or ((623/1.23).CCLS.)) and (limit or limited) near3 expansion	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/09/05 16:13
7	992	623/1.15	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/09/05 16:14
8	47	("3304557" | "3316557" | "3945052" | "4299015" | "4652263" | "4670286" | "4731073" | "4834755" | "4922905" | "5037377" | "5064435" | "5084065" | "5123917" | "5133742" | "5163952" | "5258042" | "5282847" | "5330500" | "5387621" | "5413598" | "5443499" | "5443500" | "5456713" | "5470313" | "5476507" | "5496364" | "5507770" | "5527353" | "5545209" | "5545210" | "5556413" | "5556426" | "5562725" | "5562727" | "5591195" | "5591199" | "5609605" | "5617878" | "5683451" | "5769882" | "5824037" | "5843158" | "6019786" | "6123722" | "6176875" | "6283991" | "6361557").PN.	USPAT	2003/09/05 16:38

	Document ID	K	Sc	Issue Da	Pag	Title
1	US 6361557 B1	U		20020326	18	Staplebutton
2	US 6283991 B1	U		20010904	34	Endoluminal
3	US 6176875 B1	U		20010123	20	Limited expa
4	US 6123722 A	U		20000926	28	Stitched ste
5	US 6019786 A	U		20000201	19	Braided comp
6	US 5843158 A	U		19981201	21	Limited expa
7	US 5824037 A	U		19981020	28	Modular intr
8	US 5769882 A	U		19980623	19	Methods and
9	US 5683451 A	U		19971104	26	Apparatus an
10	US 5617878 A	U		19970408	15	Stent and me
11	US 5609605 A	U		19970311	8	Combination
12	US 5591199 A	U		19970107	8	Curable fibe
13	US 5591195 A	U		19970107	18	Apparatus an
14	US 5562727 A	U		19961008	7	Intraluminal
15	US 5562725 A	U		19961008	10	Radially sel
16	US 5556426 A	U		19960917	11	PTFE implant
17	US 5556413 A	U		19960917	19	Coiled stent
18	US 5545210 A	U		19960813	7	Method of im
19	US 5545209 A	U		19960813	28	Controlled d
20	US 5527353 A	U		19960618	7	Implantable
21	US 5507770 A	U		19960416	7	Intraluminal
22	US 5496364 A	U		19960305	13	Self-support
23	US 5476507 A	U		19951219	12	Vascular pro
24	US 5470313 A	U		19951128	10	Variable dia
25	US 5456713 A	U		19951010	19	Expandable t
26	US 5443500 A	U		19950822	6	Intravascula
27	US 5443499 A	U		19950822	11	Radially exp
28	US 5413598 A	U		19950509	5	Vascular gra
29	US 5387621 A	U		19950207	8	Porous membr
30	US 5330500 A	U		19940719	8	Self-expandi
31	US 5282847 A	U		19940201	6	Prosthetic v
32	US 5258042 A	U		19931102	9	Intravascula
33	US 5163952 A	U		19921117	9	Expandable p
34	US 5133742 A	U		19920728	11	Crack-resist
35	US 5123917 A	U		19920623	9	Expandable i
36	US 5084065 A	U		19920128	7	Reinforced g
37	US 5064435 A	U		19911112	9	Self-expandi
38	US 5037377 A	U		19910806	6	Means for im
39	US 4922905 A	U		19900508	12	Dilatation c
40	US 4834755 A	U		19890530	11	Triaxially-b
41	US 4731073 A	U		19880315	11	Arterial gra
42	US 4670286 A	U		19870602	12	Method of fo
43	US 4652263 A	U		19870324	7	Elasticizati
44	US 4299015 A	U		19811110	8	Process for
45	US 3945052 A	U		19760323	5	Synthetic va
46	US 3316557 A	U		19670502	7	TEXT NOT AVA
47	US 3304557 A	U		19670221	7	TEXT NOT AVA

US005556413A

United States Patent [19]

Lam

[11] Patent Number: 5,556,413

[45] Date of Patent: Sep. 17, 1996

[54] **COILED STENT WITH LOCKING ENDS**

[75] Inventor: Sharon Lam, San Jose, Calif.

[73] Assignee: Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

[21] Appl. No.: 209,827

[22] Filed: Mar. 11, 1994

[51] Int. Cl.[6] A61M 29/00

[52] U.S. Cl. 606/198; 623/1; 623/12

[58] Field of Search 606/191, 198, 606/200, 108, 104, 105; 623/1, 12; 128/898

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,657,744	4/1972	Ersek .
4,512,338	4/1985	Balko et al. .
4,553,545	11/1985	Maass et al. .
4,560,374	12/1985	Hammerslag .
4,580,568	4/1986	Gianturco .
4,655,771	4/1987	Wallsten .
4,733,665	3/1988	Palmaz .
4,739,762	4/1988	Palmaz .
4,740,207	4/1988	Kreamer .
4,762,128	8/1988	Rosenbluth .
4,776,337	10/1988	Palmaz .
4,795,458	1/1989	Regan .
4,800,882	1/1989	Gianturco .
4,830,003	5/1989	Wolff et al. .
4,856,516	8/1989	Hillstead .
4,877,030	10/1989	Beck et al. .
4,878,906	11/1989	Lindemann et al. .
4,886,062	12/1989	Wiktor .
4,893,623	1/1990	Rosenbluth .
4,907,336	3/1990	Gianturco .
4,913,141	4/1990	Hillstead .
4,922,905	5/1990	Strecker .
4,950,227	8/1990	Savin et al. .
4,969,458	11/1990	Wiktor .
4,969,890	11/1990	Sugita et al. .
4,986,831	1/1991	King et al. .
4,994,071	2/1991	MacGregor .
4,998,539	3/1991	Delsanti .

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

0362514	8/1990	European Pat. Off. 623/1
0408245A1	1/1991	European Pat. Off. .
0541443	5/1992	European Pat. Off. 623/1
3640245A1	6/1987	Germany .
2135585	9/1984	United Kingdom .
WO98/08452	9/1989	WIPO .

OTHER PUBLICATIONS

Wright et al.: Percutaneous Endovascular Stents: An Experimental Evaluation, 69–72, 1983, *Radiology Journal.*

Dotter: Transluminal Expandable Nitinol Coil Stent Grafting: Preliminary Report, pp. 259–260, Apr. 1983, *Radiology Journal.*

Cragg et al.: Non-Surgical Placement of Arterial Endoprostheses: A New Technique Using Nitinol Wire, pp. 261–265, Apr. 1983, *Radiology Journal.*

Dotter, Charles T.: Transluminally Placed Coilspring Endarterial Tube Grafts, pp. 329–332,09–Oct. 1969, *Investigative Radiology.*

C. R. Bard: PE Plus Peripheral Balloon Dilatation Catheter, Aug. 1985, *CR Bard, Inc.*

Dupret et al.: Flexible Balloon-Expanded Stent for Small Vessels, pp. 276–278, 1987, *Radiology Journal.*

Maass et al.: Radiological Follow-up of Transluminally Inserted Vascular Endoprostheses: An Experimental Study Using Expanding Spirals, pp. 659–663, 1984, *Radiology Journal.*

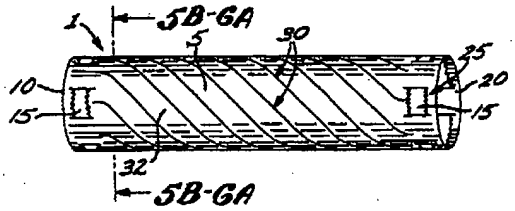
Palmaz et al.: Expandable Intraluminal Graft: A Preliminary Study, pp. 73–77, 1985, *Radiology Journal.*

Primary Examiner—Gary Jackson
Assistant Examiner—William W. Lewis
Attorney, Agent, or Firm—Fulwider Patton Lee & Utecht

[57] **ABSTRACT**

An intravascular stent comprising a cylindrical body capable of expansion having end assemblies capable of locking in an expanded state. The end assemblies may have a series of tabs and apertures that interlock and rotate as the stent ends expand to an open position to support a section of vasculature or other body lumen. The stent is bio-compatible, may be bio-erodible, and capable of localized drug delivery.

27 Claims, 9 Drawing Sheets



EAST Browser - L3: (74) (623/903).CCLS. | US 5397345 | Tag: S | Doc: 11/74 (SORTED) | "Full" 1/17 (Total images 17)

File Edit View Tools Window Help

	Document ID	R	So	Issue Da	Pag	Titl
1	US 3096560 A		U	19630709	5	TEXT NOT
2	US 4140126 A		U	19790220	4	Method f
3	US 4182339 A		U	19800108	4	Anastomo
4	US 4501263 A		U	19850226	5	Method f
5	US 4546499 A		U	19851015	13	Method o
6	US 4623347 A		U	19861118	7	Antithro
7	US 5108407 A		U	19920428	10	Method a
8	US 5211683 A		U	19930518	33	Method o
9	US 5258020 A		U	19931102	9	Method o
10	US 5304220 A		U	19940419	38	Method a
11	US 5397345 A		U	19950314	17	Artific
12	US 5407432 A		U	19950418	7	Method o
13	US 5413560 A		U	19950509	8	Method o
14	US 5425765 A		U	19950620	4	Surgica
15	US 5522880 A		U	19960604	12	Method f
16	US 5545210 A		U	19960813	7	Method o
17	US 5571172 A		U	19961105	19	Method a
18	US 5571169 A		U	19961105	21	Anti-ste
19	US 5571167 A		U	19961105	37	Bypass o
20	US 5575815 A		U	19961119	19	Local po
21	US 5591228 A		U	19970107	27	Methods
22	US 5593434 A		U	19970114	6	Stent ca
23	US 5609627 A		U	19970311	36	Method f
24	US 5609625 A		U	19970311	14	Endovasc
25	US 5653748 A		U	19970805	10	Device w
26	US 5653746 A		U	19970805	11	Radially
27	US 5662700 A		U	19970902	14	Artifici
28	US 5713859 A		U	19980203	10	Implant
29	US 5755772 A		U	19980526	15	Radially
30	US 5766239 A		U	19980616	7	Balloon-
31	US 5769885 A		U	19980623	33	Bifurcat
32	US 5782907 A		U	19980721	18	Involute
33	US 5782847 A		U	19980721	21	Anti-ste
34	US 5824034 A		U	19981020	9	Method f
35	US 5868780 A		U	19990209	6	Stents f
36	US 5916234 A		U	19990629	11	Expandab
37	US 5925076 A		U	19990720	65	Applianc
38	US 5931842 A		U	19990803	12	Methods
39	US 5938696 A		U	19990817	37	Bifurcat
40	US 5944019 A		U	19990831	38	Closed o
41	US 5980570 A		U	19991109	6	System a
42	US 5979455 A		U	19991109	38	Method f
43	US 6059821 A		U	20000509	11	Method f
44	US 6099557 A		U	20000808	6	Implant
45	US 6132459 A		U	20001017	15	Method f
46	US 6156062 A		U	20001205	14	Helical
47	US 6186942 B1		U	20010213	32	Medical
48	US 6190397 B1		U	20010220	55	Means an
49	US 6206912 B1		U	20010327	39	Medical
50	US 20010011189		U	20010802	57	In situ
51	US 20010025195		U	20010927	44	Flexible

US005397345A

United States Patent [19]

Lazarus

[11] Patent Number: 5,397,345

[45] Date of Patent: Mar. 14, 1995

[54] ARTIFICIAL GRAFT AND IMPLANTATION METHOD

[75] Inventor: Harrison M. Lazarus, Salt Lake City, Utah

[73] Assignee: EndoVascular Technologies, Inc., Menlo Park, Calif.

[21] Appl. No.: 175,691

[22] Filed: Dec. 29, 1993

Related U.S. Application Data

[60] Continuation of Ser. No. 34,587, Mar. 22, 1993, abandoned, which is a continuation of Ser. No. 732,058, Aug. 29, 1991, abandoned, which is a division of Ser. No. 166,093, Mar. 9, 1988, Pat. No. 5,104,399, which is a continuation-in-part of Ser. No. 940,907, Dec. 10, 1986, Pat. No. 4,787,899, which is a continuation of Ser. No. 559,935, Dec. 9, 1983, abandoned.

[51] Int. Cl.[6] A61F 2/06; A61F 2/54; A61B 17/00; A61M 29/00

[52] U.S. Cl. 623/1; 606/153; 606/194; 604/96; 623/66

[58] Field of Search 604/96, 104; 606/153, 606/158, 191, 192, 194, 195; 623/1, 2, 11, 66

[56] References Cited

U.S. PATENT DOCUMENTS

3,334,629	11/1964	Cohn .	
3,494,006	2/1970	Brumlik .	
3,540,431	11/1970	Mobin-Uddin .	
3,657,744	4/1972	Ersek	3/1
3,834,394	9/1974	Hunter et al. .	
3,874,388	4/1975	King et al. .	
3,908,662	9/1975	Razgulov et al. .	
3,938,499	2/1976	Bucalo .	
3,938,528	2/1976	Bucalo .	
4,006,747	2/1977	Kronenthal et al. .	
4,047,252	9/1977	Liebig et al. .	
4,056,854	11/1977	Borstus et al. .	
4,140,126	2/1979	Choudhury	623/1 X

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

0150281	11/1984	European Pat. Off. .
0423916	1/1990	European Pat. Off. .
0461791A1	12/1991	European Pat. Off. .

(List continued on next page.)

OTHER PUBLICATIONS

Alexander: Balko, M.D., et al., Journal of Surgical Research 40; 305-309 (1986) "Transfemoral Placement of Intraluminal Polyurethane Prosthesis for Abdominal Aortic Aneurysm".

David D. Lawrence, Jr., M.D., et al., Radiology 357-360 (1987). "Percutaneous Endovascular Graft: Experimental Evaluation".

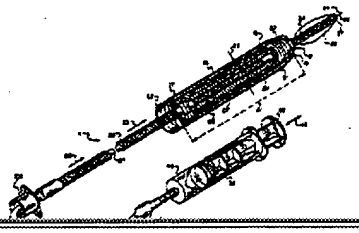
(List continued on next page.)

Primary Examiner—Randall L. Green
Assistant Examiner—Elizabeth M. Burke
Attorney, Agent, or Firm—Fulwider, Patton, Lee & Utecht

[57] ABSTRACT

An intraluminal grafting system includes a hollow graft which has a proximal staple positioned proximate its proximal end and a distal staple adapted proximate its distal end. The system includes a capsule for transporting the graft through the lumen and for positioning the proximal end of the graft upstream in a lumen which may be a blood vessel or artery. A tube is connected to the capsule and extends to exterior the vessel for manipulation by the user. A catheter is positioned within the tube to extend from the cavity and through the graft to exterior the body. The catheter has an inflatable membrane or balloon proximate the distal end thereof which is in communication via a channel with inflation and deflation means located exterior the vessel. With the inflatable membrane deflated, the capsule is positioned in the lumen and manipulated to a desired location. The inflatable membrane is manipulated by the rod away from the graft. The force exerted by the inflatable membrane and the structure of the staples urges the staples in the vessel wall, retaining the graft in position. The remainder of the intraluminal grafting system is then removed from the corporeal vessel.

10 Claims, 5 Drawing Sheets



EAST Browser - L3: (74) (623/903).CCLS. | US 5925076 | Tag: S | Doc: 37/74 (SORTED) | "Full" 1/65 (Total images 65)

File Edit View Tools Window Help

	Document ID	R	So	Issue Da	Pag	Titl
1	US 3096560 A		U	19630709	5	TEXT NOT
2	US 4140126 A		U	19790220	4	Method f
3	US 4182339 A		U	19800108	4	Anastomo
4	US 4501263 A		U	19850226	5	Method f
5	US 4546499 A		U	19851015	13	Method c
6	US 4623347 A		U	19861118	7	Antithro
7	US 5108407 A		U	19920428	10	Method a
8	US 5211683 A		U	19930518	33	Method c
9	US 5258020 A		U	19931102	9	Method c
10	US 5304220 A		U	19940419	38	Method a
11	US 5397345 A		U	19950314	17	Artifici
12	US 5407432 A		U	19950418	7	Method c
13	US 5413560 A		U	19950509	8	Method c
14	US 5425765 A		U	19950620	4	Surgica
15	US 5522880 A		U	19960604	12	Method f
16	US 5545210 A		U	19960813	7	Method c
17	US 5571172 A		U	19961105	19	Method a
18	US 5571169 A		U	19961105	21	Anti-ste
19	US 5571167 A		U	19961105	37	Bypass c
20	US 5575815 A		U	19961119	19	Local po
21	US 5591228 A		U	19970107	27	Methods
22	US 5593434 A		U	19970114	6	Stent ca
23	US 5609627 A		U	19970311	36	Method f
24	US 5609625 A		U	19970311	14	Endovasc
25	US 5653748 A		U	19970805	10	Device w
26	US 5653746 A		U	19970805	11	Radially
27	US 5662700 A		U	19970902	14	Artifici
28	US 5713859 A		U	19980203	10	Implanta
29	US 5755772 A		U	19980526	15	Radially
30	US 5766239 A		U	19980616	7	Balloon-
31	US 5769885 A		U	19980623	33	Bifurcat
32	US 5782907 A		U	19980721	18	Involute
33	US 5782847 A		U	19980721	21	Anti-ste
34	US 5824034 A		U	19981020	9	Method f
35	US 5868780 A		U	19990209	6	Stents f
36	US 5916234 A		U	19990629	11	Expandab
37	US 5925076 A		U	19990720	65	Applian
38	US 5931842 A		U	19990803	12	Methods
39	US 5938696 A		U	19990817	37	Bifurcat
40	US 5944019 A		U	19990831	38	Closed c
41	US 5980570 A		U	19991109	6	System a
42	US 5979455 A		U	19991109	38	Method f
43	US 6059821 A		U	20000509	11	Method f
44	US 6099557 A		U	20000808	6	Implanta
45	US 6132459 A		U	20001017	15	Method f
46	US 6156062 A		U	20001205	14	Helical
47	US 6186942 B1		U	20010213	32	Medical
48	US 6190397 B1		U	20010220	55	Means ar
49	US 6206912 B1		U	20010327	39	Medical
50	US 20010011189		U	20010802	57	In situ
51	US 20010025195		U	20010927	44	Flexible

US005925076A

United States Patent [19]

Inoue

[11] Patent Number: 5,925,076

[45] Date of Patent: *Jul. 20, 1999

[54] APPLIANCE TO BE IMPLANTED, METHOD OF COLLAPSING THE APPLIANCE TO BE IMPLANTED AND METHOD OF USING THE APPLIANCE TO BE IMPLANTED

[76] Inventor: Kanji Inoue, 98-13, Miyazaki-cho Shimogamo, Kyoto, Japan

[*] Notice: This patent is subject to a terminal disclaimer.

[21] Appl. No.: 08/898,427

[22] Filed: Jul. 22, 1997

Related U.S. Application Data

[62] Division of application No. 08/755,215, Jan. 3, 1997, Pat. No. 5,843,162

[30] Foreign Application Priority Data

May 19, 1995 [JP] Japan PCT/JP95/00972

[51] Int. Cl.[6] A61F 2/36

[52] U.S. Cl. 623/1; 623/12; 606/105; 606/198

[58] Field of Search 623/1, 11, 12; 606/198, 195, 194, 191, 108

[56] References Cited

U.S. PATENT DOCUMENTS

5,234,456	8/1993	Silvestrini .	
5,290,305	3/1994	Inoue .	
5,330,528	7/1994	Lazim .	
5,383,926	1/1995	Lock et al. .	
5,387,235	2/1995	Scott et al. .	
5,507,767	4/1996	Maeda et al. .	
5,554,181	9/1996	Das .	
5,607,445	3/1997	Summers .	
5,609,626	3/1997	Kenzaka .	
5,693,089	12/1997	Inoue	623/12

FOREIGN PATENT DOCUMENTS

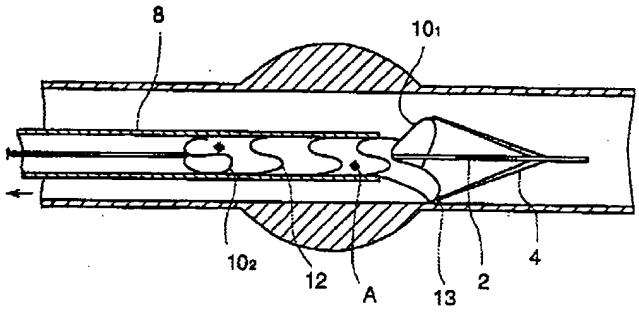
4219949	12/1993	Germany .
4-25755	2/1992	Japan .
4-263852	9/1992	Japan .
5-212121	8/1993	Japan .
7-24072	1/1995	Japan .
3009638	2/1995	Japan .
6-63155	3/1995	Japan .
2164562	3/1986	United Kingdom .

Primary Examiner—Paul B. Prebilic
Assistant Examiner—Tram A. Nguyen
Attorney, Agent, or Firm—Banner & Witcoff, Ltd.

[57] ABSTRACT

A collapsible artificial blood vessel A comprises a flexible front end wire ring 10f, a flexible rear end wire ring 10r arranged facing to the front end wire ring, a tubular cover 7 which connects the end wire rings, and a plurality of intermediate wire rings 12 arranged spaced apart from each other between the front end wire ring and the rear end wire ring. The circumference of the front end wire ring is equally divided into four segments by dividing points 41f, 42f, 43f, 44f. Hooks 13 are formed for a front pull string to be passed through at the dividing points 41f, 43f. The circumference of the intermediate wire rings are fixed to the tubular cover 7 by suturing or with adhesive at the positions 51s, 52s, 53s and 54s. The device is collapsed for use by folding the wire rings and insertion of the device into a tunnel tube.

6 Claims, 49 Drawing Sheets



	Document ID	Kind	Issue Date	Pages	Title
51	US 20030078647	U	20030424	10	Angioplasty
52	US 6551350 B1	U	20030422	44	Kink resis
53	US 20030074050	U	20030417	28	Stent/graf
54	US 20030074049	U	20030417	30	Covered st
55	US 20030074048	U	20030417	9	Tubular pr
56	US 6547815 B2	U	20030415	10	Intralumin
57	US 6547814 B2	U	20030415	16	Selective
58	US 20030065380	U	20030403	18	Endovascul
59	US 20030065379	U	20030403	13	Reduction
60	US 20030065378	U	20030403	11	Medical se
61	US 20030065377	U	20030403	45	Coated med
62	US 6540773 B2	U	20030401	21	Low profil
63	US 6537310 B1	U	20030325	17	Endolumina
64	US 20030055484	U	20030320	20	Exterior s
65	US 6530950 B1	U	20030311	14	Intralumin
66	US 20030045926	U	20030306	10	Self artic
67	US 6524337 B1	U	20030225	6	Intralumin
68	US 6524335 B1	U	20030225	14	Endolumina
69	US 6524334 B1	U	20030225	12	Expandable
70	US 6520986 B2	U	20030218	34	Kink resis
71	US 20030033002	U	20030213	14	Aorto uni-
72	US 6517573 B1	U	20030211	10	Hook for a
73	US 6517572 B2	U	20030211	39	Endovascul
74	US 6517571 B1	U	20030211	25	Vascular g
75	US 6517570 B1	U	20030211	22	Exterior s
76	US 20030028246	U	20030206	15	Compliant
77	US 20030028240	U	20030206	16	Stent-graf
78	US 20030028239	U	20030206	22	LOW PROFIL
79	US 6514283 B2	U	20030204	10	Intralumin
80	US 6514282 B1	U	20030204	35	Method of
81	US 20030023300	U	20030130	16	Endolumina
82	US 20030023299	U	20030130	16	Reposition
83	US 6511505 B2	U	20030128	16	Variable s
84	US 20030018378	U	20030123	16	Endovascul
85	US 6508835 B1	U	20030121	37	Endolumina
86	US 20030009213	U	20030109	12	Stent havi
87	US 20030009212	U	20030109	20	Axially-co
88	US 20030009211	U	20030109	17	Implant ha
89	US 20030009210	U	20030109	11	ePTFE graf
90	US 20030006528	U	20030109	16	Methods fo
91	US 20030004562	U	20030102	13	Endolumina
92	US 6500203 B1	U	20021231	25	Process fo
93	US 20020198588	U	20021226	28	Covered en
94	US 20020198587	U	20021226	19	Modular st
95	US 20020198586	U	20021226	47	APPLIANCE
96	US 6497722 B1	U	20021224	10	Methods an
97	US 20020193864	U	20021219	18	Coiled she
98	US 6494909 B2	U	20021217	14	Endovascul
99	US 6488701 B1	U	20021203	16	Stent-graf
100	US 6485513 B1	U	20021126	10	Percutaneo
101	US 20020173836	U	20021121	12	Method of
102	US 6482227 B1	U	20021119	27	Stent graf
103	US 20020169497	U	20021114	36	Endovascul
104	US 20020169496	U	20021114	19	Metods for
105	US 6478813 B1	U	20021112	37	Method for
106	US 20020165603	U	20021107	45	Kink-resis
107	US 20020165602	U	20021107	23	Self expan

US 20020165503A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2002/0165603 A1**

Thornton et al. (43) **Pub. Date: Nov. 7, 2002**

(54) **KINK-RESISTANT BIFURCATED PROSTHESIS**

(76) Inventors: **Troy Thornton, San Francisco, CA (US); Randy S. Chan, San Jose, CA (US); Lilip Lau, Sunnyvale, CA (US)**

Correspondence Address:
MORGAN & FINNEGAN, L.L.P.
345 Park Avenue
New York, NY 10154-0053 (US)

(21) Appl. No.: **10/184,989**

(22) Filed: **Jul. 1, 2002**

Related U.S. Application Data

(63) Continuation of application No. 08/772,372, filed on Dec. 23, 1996.

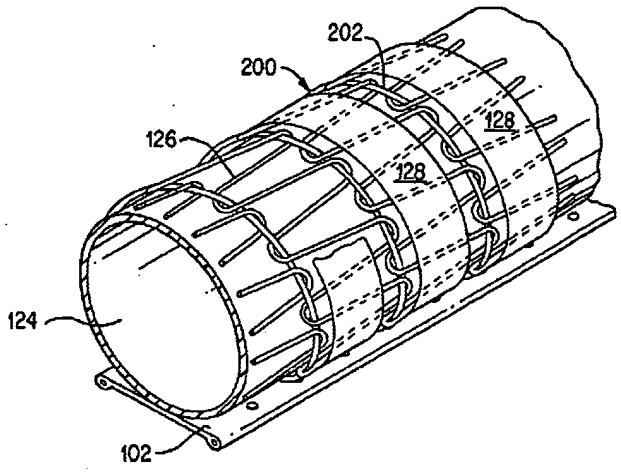
Publication Classification

(51) Int. Cl.[7] **A61F 2/06**

(52) U.S. Cl. **623/1.13**; 623/1.22; 623/1.35; 623/1.36

(57) **ABSTRACT**

The invention consists of an endoluminal prosthesis adapted for placement at a bifurcation site within the body. The stent or stent-graft may be constructed to have segments of differing structural properties. A section of the stent-graft may be constructed to have a single-lumen tubular stent member covering a multilumen graft member. The stent-graft may comprise at least two modular components adapted for in situ assembly. An extended cylindrical interference fit may be used to seal the modular components.



	Document ID	K	Sc	Issue Da	Pag	Title
64	US 20030055484	U		20030320	20	Exterior s
65	US 6530950 B1	U		20030311	14	Intralumin
66	US 20030045926	U		20030306	10	Self artic
67	US 6524337 B1	U		20030225	6	Intralumin
68	US 6524335 B1	U		20030225	14	Endolumina
69	US 6524334 B1	U		20030225	12	Expandable
70	US 6520986 B2	U		20030218	34	Kink resis
71	US 20030033002	U		20030213	14	Aorto uni-
72	US 6517573 B1	U		20030211	10	Hook for a
73	US 6517572 B2	U		20030211	39	Endovascul
74	US 6517571 B1	U		20030211	25	Vascular g
75	US 6517570 B1	U		20030211	22	Exterior s
76	US 20030028246	U		20030206	15	Compliant
77	US 20030028240	U		20030206	16	Stent-graf
78	US 20030028239	U		20030206	22	LOW PROFIL
79	US 6514283 B2	U		20030204	10	Intralumin
80	US 6514282 B1	U		20030204	35	Method of
81	US 20030023300	U		20030130	16	Endolumina
82	US 20030023299	U		20030130	16	Reposition
83	US 6511505 B2	U		20030128	16	Variable s
84	US 20030018378	U		20030123	16	Endovascul
85	US 6508835 B1	U		20030121	37	Endolumina
86	US 20030009213	U		20030109	12	Stent havi
87	US 20030009212	U		20030109	20	Axially-co
88	US 20030009211	U		20030109	17	Implant ha
89	US 20030009210	U		20030109	11	ePTFE graf
90	US 20030006528	U		20030109	16	Methods fo
91	US 20030004562	U		20030102	13	Endolumina
92	US 6500203 B1	U		20021231	25	Process fo
93	US 20020198588	U		20021226	28	Covered en
94	US 20020198587	U		20021226	19	Modular st
95	US 20020198586	U		20021226	47	APPLIANCE
96	US 6497722 B1	U		20021224	10	Methods an
97	US 20020193864	U		20021219	18	Coiled she
98	US 6494909 B2	U		20021217	14	Endovascul
99	US 6488701 B1	U		20021203	16	Stent-graf
100	US 6485513 B1	U		20021126	10	Percutaneo
101	US 20020173836	U		20021121	12	Method of
102	US 6482227 B1	U		20021119	27	Stent graf
103	US 20020169497	U		20021114	36	Endovascul
104	US 20020169496	U		20021114	19	Metods for
105	US 6478813 B1	U		20021112	37	Method for
106	US 20020165603	U		20021107	42	Kink-resis
107	US 20020165602	U		20021107	23	Self expan
108	US 20020165601	U		20021107	11	Bioabsorba
109	US 6475232 B1	U		20021105	12	Stent with
110	US 20020156523	U		20021024	22	Exterior s
111	US 20020156522	U		20021024	10	Aortic gra
112	US 20020156521	U		20021024	25	Bifurcated
113	US 20020156518	U		20021024	15	Branched a
114	US 6468301 B1	U		20021022	15	Reposition
115	US 6468300 B1	U		20021022	5	Stent cove
116	US 20020151958	U		20021017	14	Large vess
117	US 20020151957	U		20021017	20	Axially-co
118	US 6464719 B2	U		20021015	6	Low profil
119	US 20020147492	U		20021010	22	Endolumina
120	US 6461320 B1	U		20021008	34	Method and

US 20020147492A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2002/0147492 A1**

Shokoohi et al. (43) **Pub. Date: Oct. 10, 2002**

(54) **ENDOLUMINAL VASCULAR PROSTHESIS**

(76) Inventors: **Mehrdad M. Shokoohi**, Rancho Palos Verdes, CA (US); **Michael R. Henson**, Trabuco Canyon, CA (US); **Gerard von Hoffmann**, Trabuco Canyon, CA (US)

Correspondence Address:
KNOBBE MARTENS OLSON & BEAR LLP
620 NEWPORT CENTER DRIVE
SIXTEENTH FLOOR
NEWPORT BEACH, CA 92660 (US)

(21) Appl. No.: **10/032,230**

(22) Filed: **Dec. 18, 2001**

Related U.S. Application Data

(63) Continuation of application No. 09/483,411, filed on Jan. 14, 2000, now Pat. No. 6,331,190, which is a continuation of application No. 09/034,689, filed on Mar. 4, 1998, now Pat. No. 6,077,296.

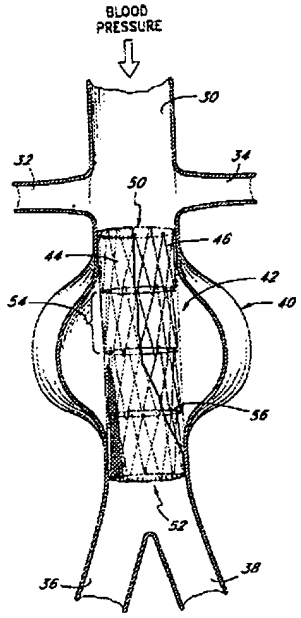
Publication Classification

(51) Int. Cl.[7] **A61F 2/06**

(52) U.S. Cl. **623/1.13; 623/1.16**

(57) **ABSTRACT**

Disclosed is a tubular endoluminal vascular prosthesis, useful in treating, for example, an abdominal aortic aneurysm. The prosthesis comprises a self expandable wire support structure surrounded by a flexible tubular membrane. A delivery catheter and methods are also disclosed.



	Document ID	K	So	Issue Da	Pag	Title
124	US 6451051 B2		U	20020917	100	Intravascu
125	US 6451048 B1		U	20020917	25	Wire conne
126	US 6451047 B2		U	20020917	16	Encapsulat
127	US 20020128703		U	20020912	8	METHOD AND
128	US 20020123789		U	20020905	10	Stent cove
129	US 20020123788		U	20020905	10	Sheath for
130	US 6443981 B1		U	20020903	12	Expandable
131	US 20020116048		U	20020822	16	Endovascul
132	US 6436132 B1		U	20020820	10	Composite
133	US 20020111668		U	20020815	9	Seamless b
134	US 20020111667		U	20020815	14	Non-expand
135	US 6432131 B1		U	20020813	8	Method and
136	US 20020107565		U	20020808	15	Endovascul
137	US 6428550 B1		U	20020806	34	Sutureless
138	US 20020103527		U	20020801	13	Stent with
139	US 20020095205		U	20020718	7	Encapsulat
140	US 20020095140		U	20020718	15	Reposition
141	US 20020091437		U	20020711	12	Polymer co
142	US 6416537 B1		U	20020709	7	Multi-stag
143	US 20020082675		U	20020627	10	Intralumin
144	US 20020082674		U	20020627	9	Surgical g
145	US 20020077693		U	20020620	21	Covered, c
146	US 20020068967		U	20020606	104	Intravascu
147	US 6398803 B1		U	20020604	7	Partial en
148	US 6398802 B1		U	20020604	15	Low profil
149	US 20020065546		U	20020530	14	Stent graf
150	US 6395022 B1		U	20020528	13	Endovascul
151	US 6395019 B2		U	20020528	20	Endovascul
152	US 6395018 B1		U	20020528	21	Endovascul
153	US 20020062147		U	20020523	17	Stent havi
154	US 20020062146		U	20020523	38	Methods an
155	US 6390098 B1		U	20020521	25	Percutaneo
156	US 20020058993		U	20020516	37	Supra-rena
157	US 20020058987		U	20020516	33	Bilateral
158	US 20020058986		U	20020516	33	Stent graf
159	US 20020058985		U	20020516	22	Thoracic a
160	US 20020058984		U	20020516	28	Extension
161	US 20020055769		U	20020509	13	Stent with
162	US 20020055768		U	20020509	13	METHOD OF
163	US 6383214 B1		U	20020507	15	Encapsulat
164	US 6383171 B1		U	20020507	36	Methods an
165	US 20020052645		U	20020502	18	Endovascul
166	US 20020052644		U	20020502	46	Implantabl
167	US 20020052643		U	20020502	22	Tapered en
168	US 6379382 B1		U	20020430	10	Stent havi
169	US 20020049489		U	20020425	7	Prosthesis
170	US 6375675 B2		U	20020423	48	Methods an
171	US 20020045931		U	20020418	10	Support st
172	US 6371982 B2		U	20020416	11	Graft stru
173	US 6371981 B1		U	20020416	14	Vascular g
174	US 20020042646		U	20020411	7	Stent devi
175	US 20020042645		U	20020411	27	Drug eluti
176	US 20020042644		U	20020411	11	Bifurcated
177	US 6368345 B1		U	20020409	49	Methods an
178	US 20020040237		U	20020404	9	ePTFE graf
179	US 20020040236		U	20020404	37	PROCEDURES
180	US 20020040235		U	20020404	11	Endovascul

US 20020040236A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2002/0040236 A1**

LAU et al. (43) **Pub. Date: Apr. 4, 2002**

(54) **PROCEDURES FOR INTRODUCING STENTS AND STENT-GRAFTS**

(75) Inventors: **LILIP LAU, SUNNYVALE, CA (US); CHARLES T. MARONEY, PORTOLA VALLEY, CA (US); WILLIAM M. HARTIGAN, FREMONT, CA (US); SHARON LAM, SAN JOSE, CA (US)**

Correspondence Address:
MICHAEL S. MARCUS
MORGAN & FINNEGAN, LLP
345 PARK AVENUE
NEW YORK, NY 10154

(73) Assignee: **Gore Enterprise Holdings, Inc.**

(*) Notice: This is a publication of a continued prosecution application (CPA) filed under 37 CFR 1.53(d).

(21) Appl. No.: **08/896,373**

(22) Filed: **Jul. 18, 1997**

Related U.S. Application Data

(63) Continuation of application No. 08/754,398, filed on Nov. 20, 1996, now abandoned.

Publication Classification

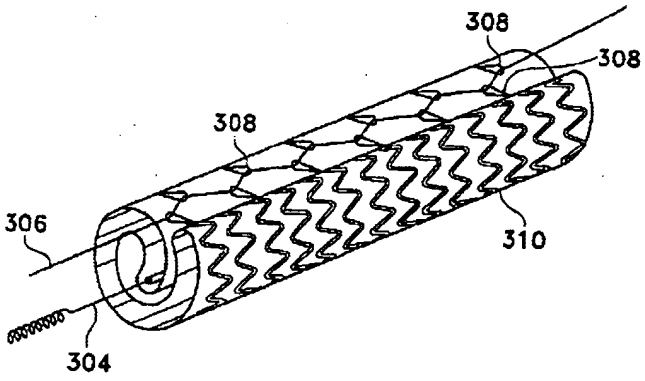
(51) Int. Cl.[7] **A61F 2/06**

(52) U.S. Cl. **623/1.12**; 623/1.13; 623/1.17; 623/1.2; 623/1.23

(57) **ABSTRACT**

This invention is a medical device and a method of using it. The device is a foldable stent or stent-graft which may be percutaneously delivered with (or on) a catheter, typically an endovascular catheter, to a body cavity or lumen and then expanded. It may also be delivered or via surgical (or other) techniques. The expandable stent structure utilizes torsional members which distribute bending and folding loads in such a way that the stent is not plastically deformed. The stent's configuration allows it to be folded or otherwise compressed to a very small diameter prior to deployment without changing the length of the stent. The graft component cooperating with the stent is tubular and preferably is blood-compatible material which may, if desired, be reinforced with fibers. The stent is able to provide collapsible support for otherwise frangible graft material.

The invention also involves procedures for folding stents and for deploying stents or stent-grafts which have been folded, bound, or otherwise collapsed to significantly smaller diameters for insertion into a human or animal body. When used with super-elastic alloys, the stent may be collapsed at a convenient temperature either above or, preferably, below the transition temperature of the alloy. The deployment procedures may involve the use of an outer sleeve to maintain the stent or stent-graft at a reduced diameter or may involve one or more external or internal "slip-lines" or "tether wires" to hold and then to release the device.



	Document ID	KSc	Issue Da	Pag	Title
186	US 6361557 B1	U	20020326	18	Staplebutt
187	US 20020035395	U	20020321	26	Implantabl
188	US 20020035394	U	20020321	23	Methods an
189	US 6357104 B1	U	20020319	9	Method of
190	US 20020032487	U	20020314	17	Prosthesis
191	US 6355056 B1	U	20020312	8	Implantabl
192	US 6355055 B1	U	20020312	8	Endovascul
193	US 20020026231	U	20020228	16	Radially e
194	US 20020026230	U	20020228	27	Removable
195	US 20020026137	U	20020228	31	Method and
196	US 20020019665	U	20020214	48	Methods an
197	US 6346119 B1	U	20020212	8	Graft equi
198	US 20020016627	U	20020207	13	Tubular st
199	US 20020016626	U	20020207	10	Intralumin
200	US 20020016625	U	20020207	12	Drug/drug
201	US 6344054 B1	U	20020205	7	Endolumina
202	US 6340366 B1	U	20020122	15	Stent with
203	US 20020007208	U	20020117	11	Device wit
204	US 20020004677	U	20020110	6	Low profil
205	US 6336937 B1	U	20020108	27	Multi-stag
206	US 6334869 B1	U	20020101	25	Endolumina
207	US 6334868 B1	U	20020101	6	Stent cove
208	US 6334867 B1	U	20020101	7	Surgical g
209	US 20010053930	U	20011220	41	Endovascul
210	US 6331527 B1	U	20011218	69	Promoter s
211	US 6331188 B1	U	20011218	22	Exterior s
212	US 20010049550	U	20011206	31	METHOD OF
213	US 6325820 B1	U	20011204	14	Coiled-she
214	US 20010047198	U	20011129	104	Intravascu
215	US 20010044647	U	20011122	13	Modular en
216	US 6319278 B1	U	20011120	9	Low profil
217	US 6319277 B1	U	20011120	10	Nested ste
218	US 20010041928	U	20011115	7	Endovascul
219	US 20010041927	U	20011115	7	By-pass gr
220	US 6315792 B1	U	20011113	34	Remotely r
221	US 6315791 B1	U	20011113	15	Self-expan
222	US 20010039446	U	20011108	20	ENCAPSULAT
223	US 6312458 B1	U	20011106	14	Tubular st
224	US 6312457 B1	U	20011106	10	Intralumin
225	US 6312456 B1	U	20011106	7	Biocompati
226	US 20010037142	U	20011101	16	Endovascul
227	US 20010037139	U	20011101	31	Method and
228	US 6309413 B1	U	20011030	12	Expandable
229	US 6309343 B1	U	20011030	9	Method for
230	US 20010032009	U	20011018	7	Partial en
231	US 20010027338	U	20011004	11	Endovascul
232	US 6296661 B1	U	20011002	21	Self-expan
233	US 20010025195	U	20010927	44	Flexible v
234	US 20010025131	U	20010927	13	Methods fo
235	US 6293965 B1	U	20010925	24	Tubular me
236	US 20010023370	U	20010920	12	COMPOSITE
237	US 6290720 B1	U	20010918	13	Stretchabl
238	US 20010021870	U	20010913	13	Externally
239	US 6287330 B1	U	20010911	37	Aortoiliac
240	US 20010020182	U	20010906	26	Expandable
241	US 20010020181	U	20010906	7	PARTIAL EN
242	US 6283991 B1	U	20010904	34	Endolumina

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2001/0020181 A1**

LAYNE (43) **Pub. Date: Sep. 6, 2001**

(54) **PARTIAL ENCAPSULATION OF STENTS USING STRIPS AND BANDS**

(76) Inventor: **RICHARD LAYNE, PHOENIX, AZ (US)**

Correspondence Address:
MORRISON & FOERSTER LLP
555 WEST FIFTH STREET SUITE 3500
LOS ANGELES, CA 90013-1024 (US)

(*) Notice: This is a publication of a continued prosecution application (CPA) filed under 37 CFR 1.53(d).

(21) Appl. No.: **09/408,890**

(22) Filed: **Sep. 29, 1999**

Related U.S. Application Data

(63) Non-provisional of provisional application No. 60/118,269, filed on Feb. 2, 1999.

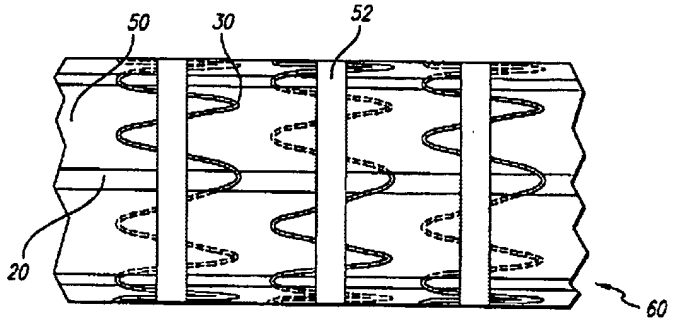
Publication Classification

(51) Int. Cl.[7] **A61F 2/06**

(52) U.S. Cl. **623/1.13; 623/1.16; 623/1.49**

(57) **ABSTRACT**

Partially encapsulated stents are made using strips and bands of covering material. In one embodiment ringed stents are placed over an inner ePTFE tube (e.g., supported on a mandrel) and are covered by a series of longitudinal strips. A series of spaced apart ePTFE circumferential bands can then be placed over the top of the longitudinal strips and ringed stents; alternatively bands alone or strips alone may be employed. All of the components of the structure are then laminated to the inner ePTFE tube to capture the stent. By selecting the size and position of the ePTFE bands, it is possible to leave critical parts of the stent unencapsulated to facilitate flexibility and expansion. The longitudinal strips can be woven about the stent and later laminated into position to provide an anti-compression function as well as overall structural stability. Although a single stent can be used, these approaches lend themselves to use of a plurality of individual ring stents spaced apart along the inner ePTFE tube.



EAST Browser - L6: (38) (2 or 3 or 4... | US 5443499 A | Tag: S | Doc: 2/38 (SORTED) | Format: KWIC

File Edit View Tools Window Help

	Document ID	K	So	Issue Da	Pag	Title
1	US 5123917 A		U	19920623	9	Expandab
2	US 5443499 A		U	19950822	11	Radially
3	US 5653746 A		U	19970805	11	Radially
4	US 5728131 A		U	19980317	11	Coupling
5	US 5782904 A		U	19980721	9	Intralum
6	US 5824046 A		U	19981020	14	Covered
7	US 5824042 A		U	19981020	23	Endolumi
8	US 5824037 A		U	19981020	28	Modular
9	US 5824034 A		U	19981020	9	Method f
10	US 5843158 A		U	19981201	21	Limited
11	US 6036725 A		U	20000314	14	Expandab
12	US 6110198 A		U	20000829	27	Method f
13	US 6139573 A		U	20001031	19	Conforma
14	US 6193745 B1		U	20010227	28	Modular
15	US 6203568 B1		U	20010320	23	Endolumi
16	US 20010000188		U	20010405	21	Limited
17	US 6224625 B1		U	20010501	6	Low prof
18	US 6245099 B1		U	20010612	16	Selectiv
19	US 20010010012		U	20010726	17	Selectiv
20	US 6270523 B1		U	20010807	13	Expandab
21	US 20010044647		U	20011122	13	Modular
22	US 6334868 B1		U	20020101	6	Stent co
23	US 6336937 B1		U	20020108	27	Multi-st
24	US 20020004677		U	20020110	6	Low prof
25	US 6344054 B1		U	20020205	7	Endolumi
26	US 20020045931		U	20020418	10	Support
27	US 6416522 B1		U	20020709	17	Intralum
28	US 6464719 B2		U	20021015	6	Low prof
29	US 6475232 B1		U	20021105	12	Stent wi
30	US 20020173837		U	20021121	19	Prosthet
31	US 20030065379		U	20030403	13	Reductio
32	US 6547814 B2		U	20030415	16	Selectiv
33	US 6554855 B1		U	20030429	22	Low prof
34	US 20030093145		U	20030515	20	Endolumi
35	US 6565596 B1		U	20030520	11	Intralum
36	US 20030125796		U	20030703	21	Low prof
37	US 6592614 B2		U	20030715	20	Cuffed e
38	US 20030149472		U	20030807	13	Modular

US-PAT-NO: 5443499

DOCUMENT-IDENTIFIER: US 5443499 A

TITLE: Radially expandable tubular prosthesis

---------- KWIC ---------

Brief Summary Text - BSTX (10):

In one preferred embodiment, the prosthesis is made from a woven fabric having substantially drawn longitudinal yarns (warp yarns) which [illegible] expansion or elongation of the prosthesis in the longitudinal direction, and radial yarns (fill yarns) which are at most partially drawn to allow for expansion of the prosthesis in the radial direction when the yield point of the radial yarns is exceeded.

Current US Cross Reference Classification - CCXR (1):

623/1.13

US-PAT-NO: 5443499

DOCUMENT-IDENTIFIER: US 5443499 A

TITLE: Radially expandable tubular prosthesis

---------- KWIC ---------

Brief Summary Text - BSTX (10):
In one preferred embodiment, the prosthesis is made from a woven fabric having substantially drawn longitudinal yarns (warp yarns) which limit expansion or elongation of the prosthesis in the longitudinal direction, and radial yarns (fill yarns) which are at most partially drawn to allow for expansion of the prosthesis in the radial direction when the yield point of the radial yarns is exceeded.

Current US Cross Reference Classification - CCXR (1):
623/1.13

EAST Browser: L6: (38) (2 or 3 or 4... | US 5824037 A | Tag: S | Doc: 8/38 (SORTED) | Format: KWIC

File Edit View Tools Window Help

	Document ID	R	So	Issue Da	Pag	T
1	US 5123917 A		U	19920623	9	Expan
2	US 5443499 A		U	19950822	11	Radia
3	US 5653746 A		U	19970805	11	Radia
4	US 5728131 A		U	19980317	11	Coupl
5	US 5782904 A		U	19980721	9	Intra
6	US 5824046 A		U	19981020	14	Cover
7	US 5824042 A		U	19981020	23	Endol
8	US 5824037 A		U	19981020	28	Modul
9	US 5824034 A		U	19981020	9	Metho
10	US 5843158 A		U	19981201	21	Limit
11	US 6036725 A		U	20000314	14	Expan
12	US 6110198 A		U	20000829	27	Metho
13	US 6139573 A		U	20001031	19	Confo
14	US 6193745 B1		U	20010227	28	Modul
15	US 6203568 B1		U	20010320	23	Endol
16	US 20010000188		U	20010405	21	Limit
17	US 6224625 B1		U	20010501	6	Low p
18	US 6245099 B1		U	20010612	16	Selec
19	US 20010010012		U	20010726	17	Selec
20	US 6270523 B1		U	20010807	13	Expan
21	US 20010044647		U	20011122	13	Modul
22	US 6334868 B1		U	20020101	6	Stent
23	US 6336937 B1		U	20020108	27	Multi
24	US 20020004677		U	20020110	6	Low p
25	US 6344054 B1		U	20020205	7	Endol
26	US 20020045931		U	20020418	10	Suppo
27	US 6416522 B1		U	20020709	17	Intra
28	US 6464719 B2		U	20021015	6	Low p
29	US 6475232 B1		U	20021105	12	Stent
30	US 20020173837		U	20021121	19	Prost
31	US 20030065379		U	20030403	13	Reduc
32	US 6547814 B2		U	20030415	16	Selec
33	US 6554855 B1		U	20030429	22	Low p
34	US 20030093145		U	20030515	20	Endol
35	US 6565596 B1		U	20030520	11	Intra
36	US 20030125796		U	20030703	21	Low p
37	US 6592614 B2		U	20030715	20	Cuffe
38	US 20030149472		U	20030807	13	Modul

US-PAT-NO: 5824037

DOCUMENT-IDENTIFIER: US 5824037 A

TITLE: Modular intraluminal prostheses construction and methods

---------- KWIC ---------

Brief Summary Text - BSTX (23):

In yet another aspect, the present invention provides a liner-limited stent-graft comprising a resilient radially expandable tubular frame, and a tubular liner disposed over at least a portion of an inner or outer surface of the frame. The liner limits the resilient expansion of at least a portion of the frame when the stent-graft is in a relaxed state. Advantageously, when the liner is disposed within the frame the tension from the frame provides a smooth prosthetic lumen defined at least in part by a taut liner surface. Furthermore, axial variations in the perimeter of the liner produce axial variations in the stent-graft lumen, even where the frame structure remains axially uniform in diameter. Such liner-limited stent-grafts are particularly well-suited for use with the selective shrinking or plastic expansion of a liner to produce axially tailored endoluminar prosthesis, as described hereinbelow.

Detailed Description Text - DETX (27):

A third axially varying prosthesis 130 includes an inelastic inner flared graft 132 which restrains the total diameter of the prosthesis from within the stent through the stent/graft attachment threads. The graft includes a greater perimeter at both ends, allowing the stent rings located in the end portions to expand to a larger diameter. The shape of this prosthesis is particularly well suited for treatment of aneurysms and other weakened vessels, as the flared ends provide secure proximal and distal anchors beyond the aneurysm, while the liner limits expansion of a central portion of the prosthesis to avoid distressing the weakened vessel wall at the aneurysm itself.

Detailed Description Text - DETX (28):

Graft material is typically highly flexible so that the prosthesis is radially compressible to a narrow diameter configuration for insertion and positioning within a body lumen. However, the graft material is also generally inelastic to avoid any stretching of the liner material after deployment, as excess loose fabric may interfere with the flow through the prosthesis lumen. As seen in each of FIGS. 6A-C, the inelastic liner of the present invention preferably limits the maximum expansion of at least a portion of the resilient frame. Specifically, at least one resilient stent ring 112 in each of axially varying prostheses 110, 120, and 130, does not reach a fully-expanded, relaxed state. Instead, the liner restrains the total expanded diameter of the

	Document ID	K	Sc	Issue Da	Pag	Title
907	US 5800456 A		U	19980901	8	Spiral ste
908	US 5788626 A		U	19980804	12	Method of
909	US 5782906 A		U	19980721	8	Combinatio
910	US 5779732 A		U	19980714	8	Method and
911	US 5779729 A		U	19980714	4	Coated ste
912	US 5776183 A		U	19980707	7	Expandable
913	US 5776182 A		U	19980707	20	Blood cont
914	US 5776181 A		U	19980707	21	Expandable
915	US 5766710 A		U	19980616	12	Biodegrada
916	US 5755782 A		U	19980526	16	Stents for
917	US 5755776 A		U	19980526	11	Permanent
918	US 5755771 A		U	19980526	10	Expandable
919	US 5741293 A		U	19980421	18	Locking st
920	US 5735897 A		U	19980407	8	Intravascu
921	US 5733330 A		U	19980331	8	Balloon-ex
922	US 5733303 A		U	19980331	14	Flexible e
923	US 5728150 A		U	19980317	15	Expandable
924	US 5725549 A		U	19980310	18	Coiled ste
925	US 5725548 A		U	19980310	5	Self-locki
926	US 5718713 A		U	19980217	10	Surgical s
927	US 5716981 A		U	19980210	121	Anti-angio
928	US 5700286 A		U	19971223	14	Polymer fi
929	US 5697971 A		U	19971216	8	Multi-cell
930	US 5690670 A		U	19971125	17	Stents of
931	US 5674278 A		U	19971007	8	Endovascul
932	US 5672169 A		U	19970930	7	Stent moun
933	US 5653727 A		U	19970805	14	Intravascu
934	US 5649977 A		U	19970722	7	Metal rein
935	US 5649952 A		U	19970722	10	Expandable
936	US 5643312 A		U	19970701	9	Stent havi
937	US 5643309 A		U	19970701	13	Cardiovasc
938	US 5632840 A		U	19970527	7	Method of
939	US 5632771 A		U	19970527	17	Flexible s
940	US 5632763 A		U	19970527	7	Bifurcated
941	US 5630840 A		U	19970520	12	Clad compo
942	US 5630829 A		U	19970520	14	High hoop
943	US 5629077 A		U	19970513	9	Biodegrada
944	US 5628787 A		U	19970513	10	Clad compo
945	US 5628785 A		U	19970513	14	Bioelastom
946	US 5624411 A		U	19970429	13	Intravascu
947	US 5607468 A		U	19970304	7	Method of
948	US 5599352 A		U	19970204	15	Method of
949	US 5591227 A		U	19970107	14	Drug eluti
950	US 5591224 A		U	19970107	14	Bioelastom
951	US 5591223 A		U	19970107	5	Re-expanda
952	US 5591222 A		U	19970107	9	Method of
953	US 5578075 A		U	19961126	11	Minimally
954	US 5575818 A		U	19961119	13	Endovascul
955	US 5575816 A		U	19961119	9	High stren
956	US 5571166 A		U	19961105	14	Method of
957	US 5551954 A		U	19960903	11	Biodegrada
958	US 5514176 A		U	19960507	8	Pull apart
959	US 5514154 A		U	19960507	11	Expandable
960	US 5449382 A		U	19950912	9	Minimally
961	US 5441515 A		U	19950815	30	Ratcheting
962	US 5411551 A		U	19950502	7	Stent asse
963	US 5411549 A		U	19950502	7	Selective

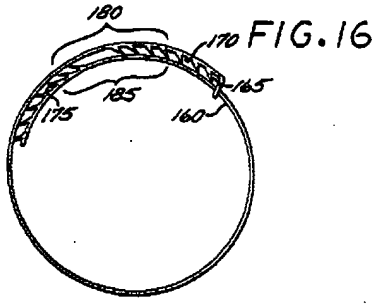


FIG. 16

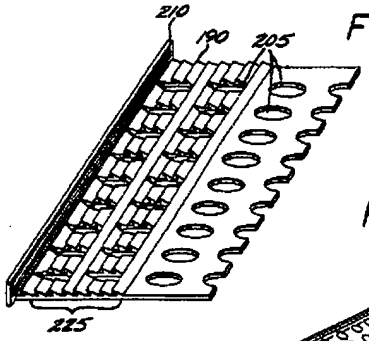


FIG. 17

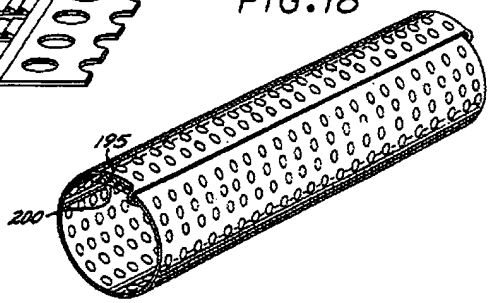


FIG. 18

EAST Browser - L2: (43) (measure or...) | US 5860923 A | Tag: S | Doc: 5/43 (SORTED) | Format: KWIC

File Edit View Tools Window Help

	Document ID	RSc	Issue Da	Pag	Ti
1	US 5394455 A	U	19950228	16	Digita
2	US 5713917 A	U	19980203	26	Appara
3	US 5752522 A	U	19980519	15	Lesion
4	US 5824040 A	U	19981020	35	Endolu
5	US 5860923 A	U	19990119	20	Lesion
6	US 5891192 A	U	19990406	5	Ion-im
7	US 5902308 A	U	19990511	15	Lesion
8	US 5902308 A	D	19990511		Body l
9	US 5948017 A	U	19990907	20	Modula
10	US 5957929 A	U	19990928	12	Expanc
11	US 5970119 A	U	19991019	16	Radiol
12	US 5970119 A	D	19991019		Radiol
13	US 5972023 A	U	19991026	23	Implar
14	US 6010511 A	U	20000104	15	Lesion
15	US 6078832 A	U	20000620	20	Lesion
16	US 6084941 A	U	20000704	8	Device
17	US 6099548 A	U	20000808	27	Appara
18	US 6106549 A	U	20000822	21	Modula
19	US 6187015 B1	U	20010213	12	Expanc
20	US 20010005793	U	20010628	12	Expanc
21	US 6273895 B1	U	20010814	16	Methoc
22	US 6283991 B1	U	20010904	34	Endolu
23	US 6287335 B1	U	20010911	102	Intrav
24	US 6287315 B1	U	20010911	27	Appara
25	US 20010027338	U	20011004	11	Endova
26	US 20010047198	U	20011129	104	Intrav
27	US 6334869 B1	U	20020101	25	Endolu
28	US 20020026210	U	20020228	18	Endova
29	US 20020065545	U	20020530	28	Appara
30	US 20020068967	U	20020606	104	Intrav
31	US 6406487 B2	U	20020618	12	Expanc
32	US 20020077634	U	20020620	28	Methoc
33	US 20020120327	U	20020829	36	Endolu
34	US 6451051 B2	U	20020917	100	Intrav
35	US 20020151954	U	20021017	13	Expanc
36	US 20020165572	U	20021107	22	Emboli
37	US 20020183629	U	20021205	11	Implar
38	US 20020183628	U	20021205	13	Pressu
39	US 20030004562	U	20030102	13	Endolu
40	US 20030125790	U	20030703	12	Deploy
41	US 6592612 B1	U	20030715	26	Methoc
42	US 20030136417	U	20030724	25	Implar
43	US 20030149368	U	20030807	11	Methoc

the length of the aneurysm can be determined by reading the calibration marks 30.

Detailed Description Text - DETX (18):

Referring to FIGS. 7-11, an exemplary method for measuring the length of a vascular aneurysm in a blood vessel 54 will be described. The method will be described with reference to the catheter 10 employing the centering balloon 44 as shown in FIG. 5. As shown in FIG. 7, the guidewire 40 is initially introduced into the vessel 54 so that it passes through the aneurysm 56. The catheter 10 is then advanced along the guidewire 40 while held within the third member 50 until a proximal end 58 of the aneurysm 56 is reached. Conventional fluoroscopy procedures are employed to visualize the radiopaque markers 18, 26 and the aneurysm 56. The catheter 10 is adjusted until the radiopaque marker 18 is aligned with a target location at the proximal end 58 of the aneurysm 56. Preferably, the target location will be at about 0.5 cm to 10 cm from the aneurysm 56. Such a distance provides sufficient space for placement of a proximal end of a graft. As shown in FIG. 8, the third elongate member 50 can optionally be radially expanded or have a malecot actuated to center the catheter 10 within the vessel 54.

Detailed Description Text - DETX (24):

A further advantage of the catheter 70 is that both the diameter and the orientation of the markers 78 in the lumen can be determined. For example, an ultrasonic imaging transducer can be inserted through lumen 74 where it can be rotated to determine the diameter of the markers 78 and the distance between each of the markers 78. Ultrasound can be used with either an elastic or an inelastic balloon 76. Use of ultrasound is advantageous in providing excellent data acquisition. The resulting dimensions can then be used to construct a dimensionally significant graphical representation, such as a three dimensional wireframe model, of the markers 78. Such a model would yield the length, diameter, and radius or curvature of the body lumen and could be used in the selection of an appropriately sized prosthetic device, such as a stent graft for treating aneurysmal disease.

EAST Browser - L2: (43) (measure or...) | US 5752522 A | Tag: S | Doc: 3/43 (SORTED) | Format: KWIC

File Edit View Tools Window Help

	Document ID	R	So	Issue Da	Pag	Ti
1	US 5394455 A		U	19950228	16	Digita
2	US 5713917 A		U	19980203	26	Appara
3	US 5752522 A		U	19980519	19	Lesion
4	US 5824040 A		U	19981020	35	Endolu
5	US 5860923 A		U	19990119	20	Lesion
6	US 5891192 A		U	19990406	5	Ion-im
7	US 5902308 A		U	19990511	15	Lesion
8	US 5902308 A		D	19990511		Body l
9	US 5948017 A		U	19990907	20	Modula
10	US 5957929 A		U	19990928	12	Expand
11	US 5970119 A		U	19991019	16	Radiol
12	US 5970119 A		D	19991019		Radiol
13	US 5972023 A		U	19991026	23	Implan
14	US 6010511 A		U	20000104	15	Lesion
15	US 6078832 A		U	20000620	20	Lesion
16	US 6084941 A		U	20000704	8	Device
17	US 6099548 A		U	20000808	27	Appara
18	US 6106549 A		U	20000822	21	Modula
19	US 6187015 B1		U	20010213	12	Expand
20	US 20010005793		U	20010628	12	Expand
21	US 6273895 B1		U	20010814	16	Method
22	US 6283991 B1		U	20010904	34	Endolu
23	US 6287335 B1		U	20010911	102	Intrav
24	US 6287315 B1		U	20010911	27	Appara
25	US 20010027338		U	20011004	11	Endove
26	US 20010047198		U	20011129	104	Intrav
27	US 6334869 B1		U	20020101	25	Endolu
28	US 20020026210		U	20020228	18	Endove
29	US 20020065545		U	20020530	28	Appara
30	US 20020068967		U	20020606	104	Intrav
31	US 6406487 B2		U	20020618	12	Expand
32	US 20020077634		U	20020620	28	Method
33	US 20020120327		U	20020829	36	Endolu
34	US 6451051 B2		U	20020917	100	Intrav
35	US 20020151954		U	20021017	13	Expand
36	US 20020165572		U	20021107	22	Emboli
37	US 20020183629		U	20021205	11	Implan
38	US 20020183628		U	20021205	13	Pressu
39	US 20030004562		U	20030102	13	Endolu
40	US 20030125790		U	20030703	12	Deploy
41	US 6592612 B1		U	20030715	26	Method
42	US 20030136417		U	20030724	25	Implan
43	US 20030149368		U	20030807	11	Method

Methods and apparatus are therefore needed for accurately measuring the cross-section of a body lumen, and in particular the diameter, circumference, and cross-sectional area of a vascular lesion. In one particular aspect, it would be desirable to provide improved methods and apparatus for the measurement of blood vessels in the region adjacent aneurysms so that the proper size of intraluminal prostheses, such as grafts and stents, can be accurately determined. It would be further desirable if such methods and apparatus were simple to use and could be used with existing fluoroscopy technology. Finally, it would be particularly desirable if such measurements could be taken without causing unnecessary stress to the diseased vessel.

Brief Summary Text - BSTX (16):

The present invention provides methods and apparatus for determining a cross-sectional dimensions of body lumens, and particularly for determining the cross-sectional area, circumference and diameter of target regions within body lumens. Body lumens amenable to the methods and apparatus of the present invention include blood vessels, the intestines, the urethra, and the like. Although suitable for the measurement of most body lumens, the present invention will find its greatest use in the measurement of vascular lesions, particularly vascular aneurysms, vascular stenoses, and the like. Advantageously, the cross-sectional dimensions of such lesions can be used to select the proper size of intraluminal prostheses, such as grafts and stents, the proper balloon for balloon angioplasty procedures, and the proper therapy for that vascular lesion.

Detailed Description Text - DETX (2):

The present invention provides methods and apparatus for determining cross-sectional dimensions, such as the internal diameter, circumference, or cross-sectional area, of a body lumen. The methods and apparatus will preferably be used to measure the cross-section of vascular lesions, and will find its greatest use in measuring the diameter of vascular aneurysms and stenoses. The methods and apparatus can also find use in measuring internal dimensions of other defects or abnormalities. Diameter and peripheral lengths provided by the present invention will be particularly useful in sizing intraluminal prostheses, such as vascular grafts or stents, that are endovascularly placed within the vessel to treat the aneurysm or other abnormality. Cross-sectional areas provided by the invention can also be used to select the proper diameter for a balloon angioplasty catheter or to size other therapeutic devices.

Detailed Description Text - DETX (11):

As shown in FIG. 2, catheter 10 has been inserted within an abnormal lumen 30 and aligned with a target region 32. The diameter of target region 32 might, for example, be needed to determine the size of an intraluminal stent to be inserted within lumen 30. Balloon 20 is shown inflated, thereby blocking a normal blood flow F. Thus the pressure and flow acting on external sensor 24 has been altered. This information is transmitted to the physician via wires

EAST Browser - L21: (26) (cut or cutt... | US 5824040 A | Tag: S | Doc: 25/26 (SORTED) | Format: KWIC

File Edit View Tools Window Help

	Document ID	K	So	Issue Da	Pag	Title
1	US 20030149473		U	20030807	23	Multi-sect
2	US 20030125797		U	20030703	45	Advanced e
3	US 6585758 B1		U	20030701	22	Multi-sect
4	US 20030120338		U	20030626	29	Advanced e
5	US 20030120333		U	20030626	37	Furcated e
6	US 20030120331		U	20030626	30	Advanced e
7	US 20030120330		U	20030626	36	Delivery s
8	US 20030120263		U	20030626	34	Apparatus
9	US 20030028240		U	20030206	16	Stent-graf
10	EP 938879 A		D	20030206		Stent-graf
11	US 6488701 B1		U	20021203	16	Stent-graf
12	US 20020173836		U	20021121	12	Method of
13	US 20020165601		U	20021107	11	Bioabsorba
14	JP 2002253553 A		J	20020910		GRAFT INSE
15	US 20020120327		U	20020829	36	Endolumina
16	US 20020065550		U	20020530	27	Helically
17	US 6364904 B1		U	20020402	27	Helically
18	US 6306145 B1		U	20011023	9	Reduced di
19	US 6283991 B1		U	20010904	34	Endolumina
20	US 6183481 B1		U	20010206	22	Delivery s
21	US 6074398 A		U	20000613	10	Reduced di
22	US 6059824 A		U	20000509	9	Mated mair
23	US 6030414 A		U	20000229	11	Variable s
24	US 5928258 A		U	19990727	11	Method and
25	US 5824040 A		U	19981020	36	Endolumina
26	US 5755774 A		U	19980526	8	Bistable

US-PAT-NO: 5824040

DOCUMENT-IDENTIFIER: US 5824040 A

TITLE: Endoluminal prostheses and therapies for highly variab body lumens

---------- KWIC ----------

Detailed Description Text - DETX (22):

A method of fabricating a helical stent-graft 71 will be described with reference to FIG. 5E. A series of linked diamond-shaped elements 73 are firs attached to a strip of liner material 75, typically being stitched with a sewing machine. The ribbon is then wound over a mandrel 77 of the desired size, and adjacent edges of the ribbon are sewn to each other (or otherwise permanently joined). Such a method may be substantially automated and continuous, and is thus particularly beneficial for producing a large number prostheses. The helical stent-graft may optionally be cut to length, but wil preferably include a crown stitched stent-ring 79 for sealing and ends agains a surrounding lumen when deployed therein.